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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,670	02/08/2002	Philip J. Kellman	RTN-173PUS	4015

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CANTON, MA 02021

EXAMINER

WOODS, ERIC V

ART UNIT	PAPER NUMBER
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2628

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11/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/071,670

Applicant(s)

KELLMAN ET AL.

Examiner

Eric Woods

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-8, 12, 13, 26-29, 39, 42 and 45-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-8, 12-13, 26-29, 39, 42, 45-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, see Remarks pages 7-18 and claim amendments, filed 8/3/2007, with respect to the rejection(s) of claim(s) 5-8, 12, 13, 26-29, 39, and 45-50 under 35 USC 103(a) have been fully considered and are persuasive.

Therefore, in view of applicant's amendments to the claims, the rejection of claims 5-8, 12, 13, 26-29, 39, and 45-50 under 35 USC 103(a) has been withdrawn.

Applicant's arguments are therefore moot.

However, upon further consideration, a new ground(s) of rejection is made in view of various references as set forth below.

Claim Objections

Claim 49 stands objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. See rejection of claim 49 under 35 USC 103(a) below. Further, specifically, the parent claim recites that shape is the sole indicator of altitude and claim 49 recites that the processor changes only the shape of the icon in response to a change in the altitude information.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 39, 42, 26-29, and 7-8 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 42 contradicts itself. Claims 12 and 13 clearly define 'shape' to be the sole / exclusive indicator of the altitude. Claim 42 inherently contradicts that by designating multiple characteristics (e.g. size and shape) to be indicative of altitude. Size and shape are clearly differentiated in both the references in applicant's specification and there is no overlap between the terms.

Claim 39 contradicts the parent claim 13 by stating the size is exclusively indicative of altitude where the parent claim recites shape.

Claims 26-29 and 7-8 stand rejected as failing to correct the deficiencies of their parent claim(s).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 5-8, 12-13, 26-27, 39, 42, and 45-52 are rejected under 35

U.S.C. 103(a) as being unpatentable over Hancock (US 5,227,786) in view of Hancock2 (US 5,179,377 A).

As to claim 12,

A system for conveying aircraft altitude to a human observer, comprising:

(Hancock Abstract, Figures 2(a)-2(b))

-A processor continuously receiving latitude, longitude, and altitude information relating to an aircraft, (Hancock Figure 4, elements 76 and 78 – receiving information info from “own aircraft inputs” and 74. See 1:25-31, Fig. 8 continuously)

-Wherein the processor determines, based on the altitude information, a shape for an icon representing the aircraft, wherein the shape is the sole indicator of the altitude of the aircraft; and (Hancock Figs 2(a), 2(b) generated by element 78 Fig 4, 4:30-38, 99:45-100:2)

-A display in operable communication with the processor, the display providing a two-dimensional planar view and having a first axis representing latitude and a second axis representing longitude, wherein the processor directs the display to present the icon at a position on the display indicative of the latitude and longitude of the aircraft, wherein the shape of the displayed icon is the sole indicator of the altitude of the

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aircraft and wherein the processor directs the display to change the shape of the icon in response to receiving a change in the altitude information.

(Hancock display 72, Figure 4, display providing pseudomorphic view as in Figures 2(a)-2(b)(3:62-4:37); shape of icon as explained in 4:30-38, 99:45-100:2, where display updates with receipt of information as in Figures 4, 8 – azimuth information in 4:20-22)

Hancock does not expressly teach **first axis representing latitude and second axis representing longitude** but teaches cylindrical with azimuth information, which converts from cylindrical back to rectangular coordinates, but Hancock2 (Fig 3) clearly teaches that longitude and latitude can be shown and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hancock to show such axes as in Hancock2 because it would allow user to better visualize distance effects with scaled aircraft since Hancock does not change spacing of grid (4:57-59).

As to claim 13, this is the method implemented by system of claim 12 where this claim is similar in scope to the claim 12, the rejection to which is incorporated by reference in its entirety.

TCAS information definitely includes 3D coordinates (Hancock 1:25-30) which must prima facie be correlated to be shown on the display, where 'sole' = "exclusively".

As to the claim 51, this claim is similar in scope to the claim 13, the rejection that is incorporated by reference in its entirety.

This claim recites that the shape of icon is utilized to convey one of three classes of information. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Hancock to use the shape of the icon to convey desired type of information dependent upon what type of map / grid / view was being utilized to facilitate user understanding of the map / view under study for the quick visual comprehension.

As to claim 5, Hancock does not expressly teach but Hancock2 teaches a **limited number of discriminably different sizes of icon** (e.g. 3)(3:35-41).

Motivation / rationale incorporated from rejection of parent claim.

As to claim 6, Hancock does not expressly teach **continuously variable relationship** for icon shape, but teaches such relationship for size (4:11-13), wherein It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hancock to allow such relationship because it allows natural gradient of values rather than limited set of fixed sizes.

As to claims 45 and 47, Hancock does not expressly teach that altitude information comes from the aircraft itself. Examiner takes Official Notice that it is well known that manned aircraft are required by regulatory agencies to have altimeter such that they are aware of own height. Since external sources of altitude information would be transmitted to the aircraft via radio frequencies, and it is well known that such RF transmissions are subject to heavy interference in certain circumstances (bad weather, etc), it would have been obvious to one of ordinary skill in the art at the time the invention was made that the aircraft should

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use its own instrumentation to monitor altitude in order that it can obtain correct information under all circumstances for safety / life- critical applications.

As to claims 46 and 48, Hancock discloses system known to receive TCAS transponder information from other aircraft, as in Figure 4. wherein 2:10-47 clearly discloses how the system receives altitude information. This information is clearly obtained via radar (transponder or otherwise; 4:38-40, 5:1-10).

As to claim 49, since the parent claim requires: "...the processor determines, based on the altitude information, a shape of the icon representing the aircraft, wherein the shape is the sole indicator of the altitude of the aircraft..." Hancock clearly shows in Figures 2(a) and 2(b) that the shape of the icon is changed, so it therefore must teach **"the processor directs the display to change only the shape of the icon in response to receiving a change in the altitude information."**

As to claim 51, it is similar in scope to claim 13, the rejection to which is incorporated by reference. The claim recites that the display can show any of three position variables via the shape of the icon, where the claim 13 speaks only of altitude information. Claim 13 teaches one of the recited three characteristics, e.g. that altitude is only represented by shape. It would have been obvious to one of ordinary skill in the art at the time the invention is made that any aircraft has three coordinates (latitude, longitude, and altitude) and that it would have been obvious to show two of them on a two-dimensional display and transmit the other through some defining characteristic, as is done by Hancock in the case of claim 13.

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As to claim 39, clearly as noted above Hancock2 changes the size of the icon with respect to the altitude or changes in the third coordinate z, where the changed icon is updated on the display as discussed above. See Figure 2, 4:8-21, where differences in altitude are used to configure the size of the icon just as the size of the icon in Hancock varies with range. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hancock to utilize size as well and/or by itself, since size is easier to distinguish under high cognitive workload, etc.

As to claim 26, Hancock does not expressly teach but Hancock2 teaches **a limited number of discriminably different sizes of icon** (e.g. 3)(3:35-41). Motivation / rationale incorporated from rejection of parent claim.

As to claim 27, Hancock expressly teaches **continuously variable relationship** for icon size (4:11-13).

As to claim 42, Hancock does not expressly teach but Hancock2 clearly teaches that icons are changed in size and shape (e.g. overlaid threat symbol) with respect to each other when they are close to each other (e.g. the distance between the aircraft is sufficient to cause a traffic and/or resolution advisory) – see Hancock, Figures 1 and 2 – the icon size is clearly changed as the differential altitude changes –see 2:50-55, 3:35-50). The Hancock reference further teaches that it is advisable to have redundant coding (e.g. different size and overlaid threat symbol) for an icon representing the aircraft. Note that Hancock clearly teaches that the size of the icon varies with respect to differential altitude (4:6-35 for Figure 2, with the icon size varying with the relative location of

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other planes to the present location of the aircraft). Motivation is found in the fact that redundant coding is more efficacious, so the use of size and shape would work well.

As to claim 52, clearly Hancock teaches that the size of the 4:15-10 icon represents the range of the traffic symbol, where from Figure 2 it is clear that no other specific reference frame is provided for range information.

Claims 28-29 stand rejected under 35 USC 103(a) as unpatentable over Hancock in view of Hancock2 as applied to claim 13 above, and further in view of Azuma et al ("Visualization Tools for Free Flight Air-Traffic Management").

As to claims 28 and 29, the rejection to claim 39 above is incorporated by reference in its entirety.

Hancock and Hancock2 do not expressly teach but Azuma clearly teaches that a desired characteristic correlates with a higher value of the third coordinate – that is, the characteristic (grayscale, e.g. level of hue) changes monotonically with the value of the third coordinate (e.g. altitude). It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to vary such other characteristics as might be linked to the third coordinate in a similar manner. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hancock to utilize such a relationship in order to allow the user to understand what part of the range the perceived

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size/shape was in (e.g. higher or lower). The direction of such change is a matter of user preference.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Feibush et al (Feibush, E.; Gagvani, N.; Williams, D. "Visualization for Situational Awareness.")

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 8am - 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric Woods

11/9/2007


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER